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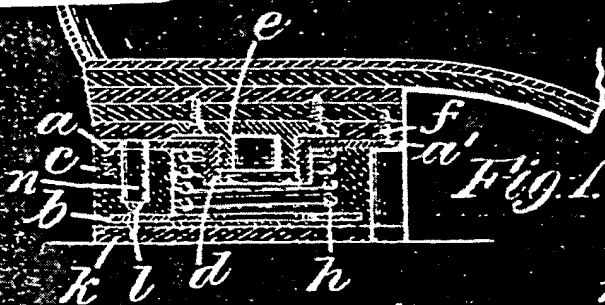


Fig. 1.

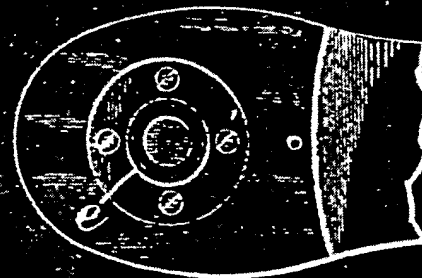


Fig. 2.

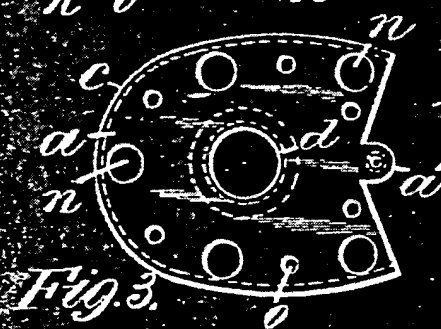


Fig. 3.

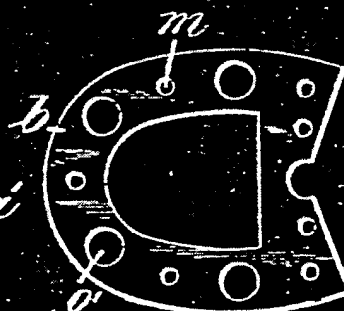


Fig. 4.

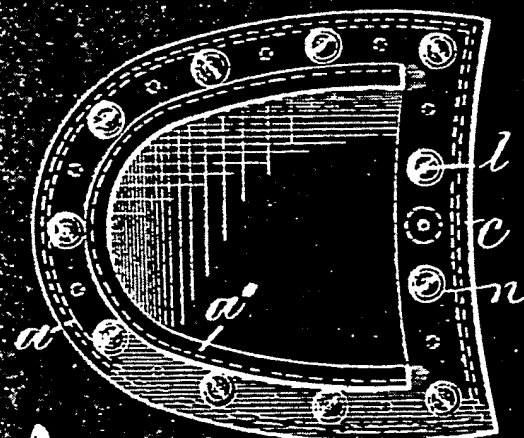


Fig. 5.

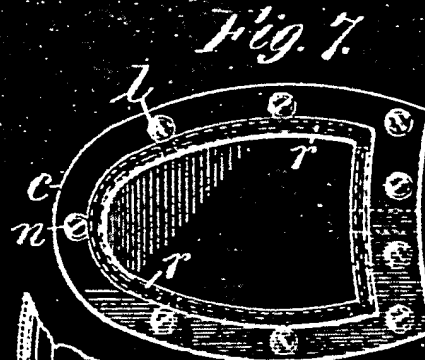


Fig. 7.

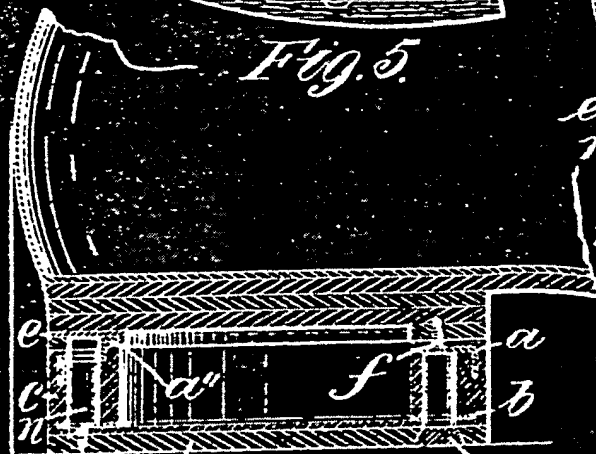


Fig. 6.

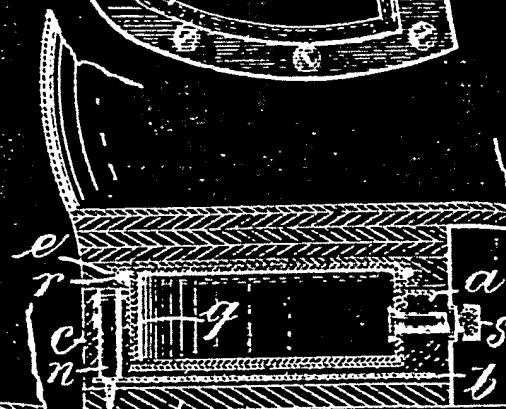


Fig. 8.



Fig. 9.

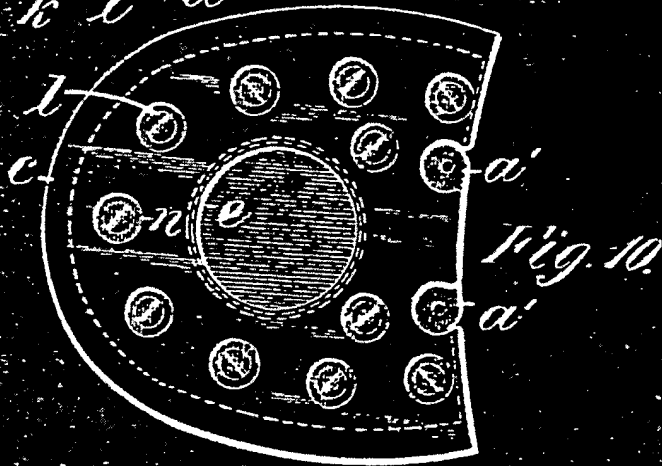


Fig. 10.



Fig. 11.

Fig. 13.

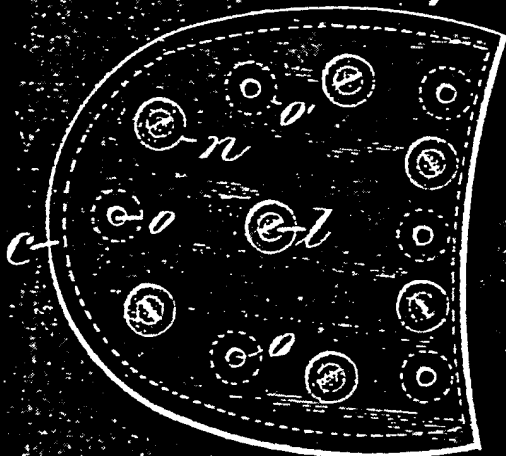


Fig. 12.

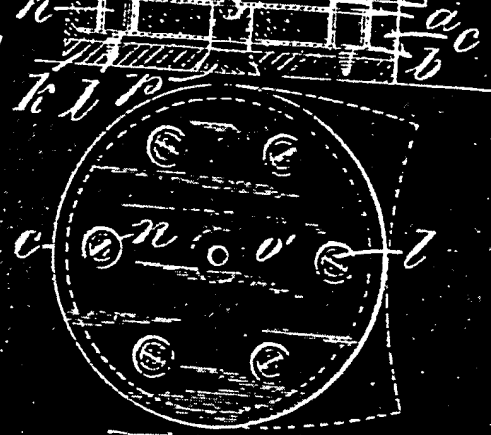
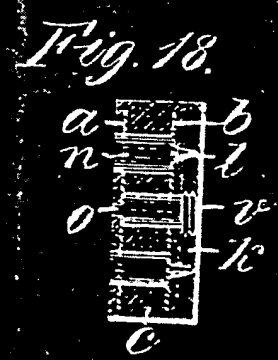
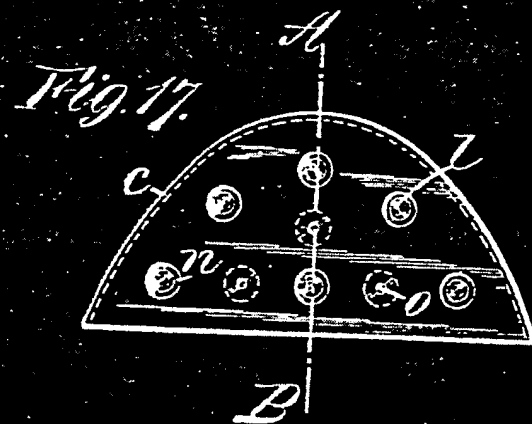
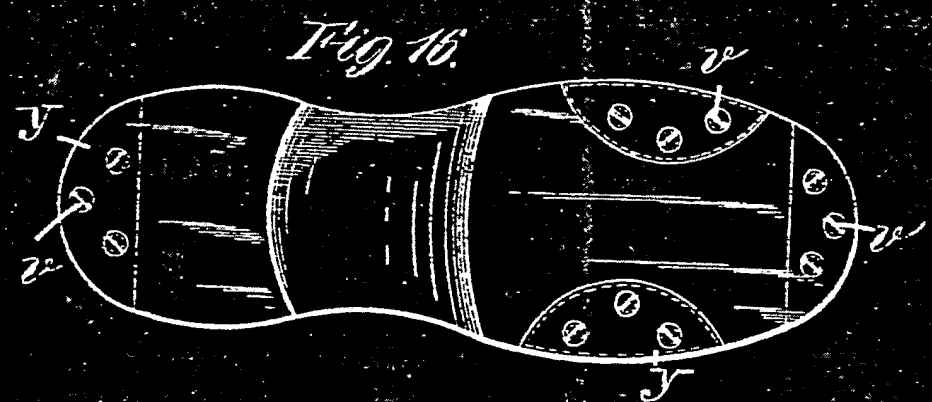
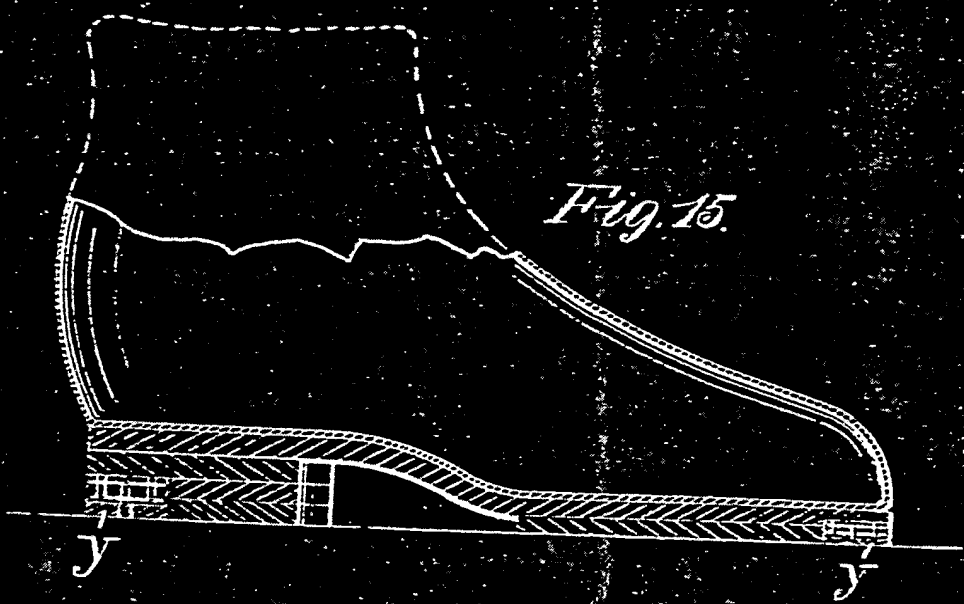


Fig. 14.

[This Drawing is a reproduction of the Original on a reduced scale.]



[This Drawing is a reproduction of the original on a reduced scale.]

N<sup>o</sup> 21,594



A.D. 1902

Date of Application, 4th Oct., 1902  
Complete Specification Left, 4th July, 1903—Accepted, 6th Aug., 1903

### PROVISIONAL SPECIFICATION.

#### Improvements in and connected with Boots and Shoes.

I, THOMAS HENRY SLACK, of London Road, Alderley Edge, in the County of Chester, Boot and Shoe Dealer, do hereby declare the nature of this invention to be as follows:

This invention has as its object the construction of the soles and heels of boots and shoes so that they may be more readily attached, and so also as to give greater comfort to the wearer.

The heel or sole constructed according to my present improvements consists of an upper and a lower plate which may be constructed of hard rubber, metal, leather or any other suitable material cut to the shape of the heel or sole, and these plates are separated by a flexible wall of indiarubber leather or the like material. A cavity is thus produced in the substance of the heel or sole in which a pneumatic cushion or metallic or other springs are inserted. The spring or cushion together with the flexible walls give an elasticity to the heels or soles which adds greatly to the comfort of the wearer and increases the durability of the boots or shoes of which they form part. The sole or heel may be attached to the boot by nails, by cement, or by other usual and suitable means.

In cases where a pneumatic cushion is used, this cushion may be inflated through a non-return valve in the manner and by the means adopted in the inflation of a pneumatic tyre. Also, in these cases, the flexible wall may be provided with an inextensible wire or other edge, which will engage a correspondingly shaped projecting part on the lift of the heel or upon the first outer sole and be secured by the inflation of the cushion.

Dated this 3rd. day of October A.D. 1902.

W. E. HEYS & SON,  
Agents for the Applicant.

### COMPLETE SPECIFICATION.

#### Improvements in and connected with Boots and Shoes.

I, THOMAS HENRY SLACK, of London Road, Alderley Edge, in the County of Chester, Boot and Shoe Dealer, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement.

This invention has as its object the construction of the soles and heels of boots and shoes so that they may be more readily attached, and so also as to give greater comfort to the wearer.

The heel or sole constructed according to my present improvements consists of an upper and a lower plate which may be constructed of metal and cut to the shape of the heel or sole and be separated by a flexible wall of indiarubber

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*Slack's Improvements in and connected with Boots and Shoes.*

or the like material.<sup>1</sup> A space or cavity is thus produced in the substance of the heel or sole in which a spring, cushion or the like may be inserted. This cushion or spring may also be formed of indiarubber and may be perforated or formed as desired, and instead of being separate from the indiarubber flexible wall it may be formed or moulded integral therewith, or the walls themselves may be of sufficient thickness to give the required elasticity.

Instead of the upper and lower plates being of metal they may be of any other suitable material.

The sole or heel may be attached to the boot by nails, screws, cement, or by other suitable and similar devices, attached to or engaging with the upper plate, or by means of a wire or other inextensible edge engaging with a correspondingly shaped projection upon the lift of the heel or upon the first outer sole. If an inflatable air cushion is used the heel or sole may be secured to the boot by the inflation of the cushion.

The accompanying drawings to which reference will be hereinafter made illustrate different forms or modifications of the improved heel or sole attachment, similar letters of reference being used to indicate similar parts where they occur in the different figures.

Figure 1 illustrates in vertical section a heel constructed according to these improvements and attached to a boot. *a* and *b* are respectively the upper and lower plates. *c* is the wall of indiarubber or the like which separates them, and to which they are respectively connected or attached. This attachment may be conveniently performed by moulding and vulcanising the rubber and the plates together, the latter being provided with holes, projections, or the like, so that engagement is effectually obtained, or the plates may be completely embedded in the indiarubber as shown in the case of the lower plate *b* in Figure 1 or of both plates as illustrated in later figures. The upper plate *a* is formed with a screwed extension *d* capable of engaging with a correspondingly screwed stud or projection *e* upon or from the lift of the heel. When the heel is screwed in place as shown in Figure 1 it may be prevented from further rotation by the screw *f* which passes through the lug *a'* formed on the upper plate and engages with the lift of the boot heel. It is evident that the improved elastic heel can thus be easily put into place and removed. *h* is a helical or coiled metallic spring inserted between the two plates *a* and *b*. The bottom of the elastic heel may be protected or strengthened by the addition of a tread of leather or the like *k*. This tread may be secured in place by small screws *l* adapted to pass through holes *m* in the lower plate *b*. The upper plate *a* is in that case formed with larger holes *n* which will permit the passage of the heads of the screws *l* and the instrument by which they are screwed up or unscrewed. This of course is done when the elastic heel is detached from the boot. The openings *n*, of course, extend through the rubber or elastic wall.

Figure 2 is a plan from underneath of the screwed stud or the like *e* attached to the underside of the lift of the heel.

Figures 3 and 4 are plans respectively of the upper and lower plates *a* and *b*. The upper plate may be formed with the screwed tubular extension *d* as indicated by dotted lines, or it may be formed with smaller holes *o* coincident with holes *o'* in the lower plate *b* for the passage of screws, as will be more fully described later.

Figures 5 and 6 show a modified form of elastic heel and devices for attaching it to the boot. As before, *a* and *b* are the upper and lower plates, and *c* is a wall or cushion of indiarubber which separates them and is attached to them. The upper plate *a* projects from the upper surface of the heel as shown at *a''* in the section Figure 6 and in the plan of the detached heel Figure 5, and the projecting part is hooked or returned and formed approximately as a horse shoe so that it may be slid upon and engaged with a correspondingly shaped downward projection from the plate *c*, which is screwed to the under side of the lift of the heel. *f* is a screw which passes

through a hole in the substance of the elastic heel and through the upper plate *a* to engage with the heel lift, so as to prevent accidental displacement of the elastic heel. The hole in the tread through which the screw *f* is passed is afterwards plugged by the plug *p*.

Figures 7 and 8 respectively show in plan and vertical section a modified form of the improved heel which is adapted to be held in place by the inflation of the contained pneumatic cushion *g*. The upper part of the heel has attached to it several wires or inextensible parts *r* which, upon inflation of the cushion, are forced into engagement with a downwardly projecting part from the plate *c* which is secured to the lift. *s* is a valve through which inflation and deflation may be effected.

Figures 9 and 10 illustrate in section and plan respectively a further modification of the heel already described with reference to Figure 1. In this case the helical or like spring *h* is dispensed with and is substituted by a cushion of rubber, or equivalently by a thickening of the wall *c*. Also two screws *f* may be employed for preventing rotation of the heel upon the lift when desired, the upper plate *a* being formed with two corresponding lugs or perforated parts *a'*. In this figure as in Figures 11 and 13 the plates *a* and *b* are shown as well embedded in the rubber.

In Figures 11 and 12 is illustrated a boot heel in which any plate or the like securing device on the boot lift is dispensed with. The upper plate *a* has holes *o* formed in it for the passage of the screws *t* which are engaged with the lift or fixed part *x* of the heel. The lower plate *b* and the rubber and the tread may have enlarged holes *o'* for the passage of the heads of these screws, the holes in the tread being afterwards plugged as at *p*.

A circular form of heel capable of being revolved round a central pin to compensate for unequal wear is shown in section and plan in Figures 13 and 14. *t* is a central pin engaging with the upper plate *a* and the lift of the boot. The hole in the tread through which it passes may be plugged if desired.

Instead of the improved elastic heel or part being of a size sufficient to cover the whole of the heel of the boot, it may be reduced and be so disposed as to cover a part only of either a heel or a sole. This is shown in Figures 15 and 16 where such parts *y* are shown applied both to a heel or a sole at the points where they are most necessary. Each consists as before described of the upper and lower plates with the intervening wall or cushion, and are attached in place by any of the means described with reference to the former figures. Such a part is drawn to a larger scale in plan and section respectively in Figures 17 and 18. The holes in the tread are shown as plugged by screw plugs *r*, and such plugs may be used whenever necessary in the modifications of elastic heels already described. These smaller parts may project from the surface of the heel or sole or may be flush therewith as shown.

A complete sole for a boot may be formed in the same manner as the complete heel already described and be attached in a similar way, but it will be found more generally convenient to form the cushions for the sole in the small pieces illustrated in Figures 15 and 16.

The different modifications in the different heels or the like may be combined together in any other way than those illustrated, which are only intended as types.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

1. A removable elastic heel or the like for boots or shoes, consisting essentially of two metal or like plates with an intervening cushion or wall of india-rubber or similar elastic material or substance, constructed and arranged substantially as hereinbefore described and as illustrated by the accompanying drawings.

*Slack's Improvements in and connected with Boots and Shoes.*

2. A removable elastic heel or the like for boots or shoes, comprising two metal or like plates with an intervening elastic cushion and means or devices for securing the upper plate to the lift of the boot, all substantially as hereinbefore described, and as illustrated by the accompanying drawings.

3. A removal elastic heel or the like for boots or shoes, comprising two metal or like plates with an intervening elastic cushion, means or devices for securing the upper plate to the lift of the boot, and a tread or covering secured to the lower plate, all substantially as hereinbefore described and as illustrated by the accompanying drawings.

4. An elastic heel or the like for boots or shoes, constructed and arranged substantially as hereinbefore described and as illustrated by the accompanying drawings.

Dated this 30th day of June, 1903.

W. E. HEYS & SON  
Agents for the Applicant

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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1903.

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